

WHAT IS CLAIMED IS:

1. A method of preparing an ethylene polymerization catalyst, comprising:
 - (a) (a1) reacting magnesium halide with alcohol in the presence of a hydrocarbon solvent,
 - (a2) reacting the resulting product solution from the step (a1) with dialkylmagnesium, and
 - (a3) reacting the resulting product from the step (a2) with alkyl halide or silane halide, to give a magnesium complex;
 - (b) reacting the magnesium complex with a titanium compound, to give a magnesium-titanium complex; and
 - (c) reacting the magnesium-titanium complex with an electron donor.
2. The method as set forth in claim 1, wherein the magnesium halide is a compound represented by a formula of MgX_2 , in which X is a halogen element belonging to Group VII in the periodic table.
3. The method as set forth in claim 1, wherein the alcohol is a compound represented by a formula of R^1OH , in which R^1 is an alkyl radical having 1 to 10 carbons.
4. The method as set forth in claim 1, wherein the dialkylmagnesium is a compound represented by a formula of MgR^2R^3 or $MgR^2R^3 \cdot (AlR^4)_3$, in which R^2 , R^3 and R^4 , which are the same or different, respectively are an alkyl radical having 1 to 10 carbons.
5. The method as set forth in claim 1, wherein the alkyl halide is a compound represented by a formula of R^5X , in which R^5 is an alkyl radical having 1 to 5 carbons, and

X is a halogen element belonging to Group VII in the periodic table.

6. The method as set forth in claim 1, wherein the silane halide is a compound represented by a formula of $R^5_mSiX_{4-m}$, in which R^5 is an alkyl radical having 1 to 5
5 carbons, X is a halogen element belonging to Group VII in the periodic table, and m is an integer ranging from 0 to 3.

7. The method as set forth in claim 1, wherein the titanium compound is a compound represented by a formula of TiX_4 , in which X is a halogen element belonging to
10 Group VII in the periodic table, or an alkoxy radical selected from among OC_2H_5 , OC_3H_7 and OC_4H_9 .

8. The method as set forth in claim 1, wherein the electron donor is an organic acid ester compound represented by a formula of $R^6(COO)_nR^7_mR^8_{n-m}$, in which R^6 is saturated
15 hydrocarbons, unsaturated hydrocarbons, alicyclic hydrocarbons or aromatic hydrocarbons having 1 to 18 carbons, R^7 and R^8 , which are the same or different, respectively are an alkyl radical having 1 to 18 carbons, and n and m, which are the same or different, respectively are an integer of 1 or 2 ($m \leq n$).

20 9. The method as set forth in claim 1, wherein the steps (a2) and (a3) are carried out at -30 to 100°C .

10. The method as set forth in claim 1, wherein a molar ratio of the magnesium complex and the titanium compound ranges from 1:0.5 to 1:10, and the step (b) is carried
25 out at -20 to 100°C .

11. The method as set forth in claim 1, wherein a molar ratio of the magnesium complex and the electron donor ranges from 1:0.01 to 1:0.5.